10.3 Counting Methods and Probability Name: _____

1. Suppose there are 14 balls numbered 1 through 14 in a bucket.

    a. If the event of interest (E) is picking a ball with a number greater than 6, what is the complement of the event (E^C)? List the outcomes in set notation.

    b. In how many ways can you randomly draw four balls from this bucket…
        i. in any order?

        ii. in a specific order?

    c. What is the probability of reaching into the bucket and randomly drawing four balls numbered 3, 6, 8, and 11, without replacement, in that order?

2. Suppose there are 3 sets of balls numbered 1 through 15 in a bag. If 3 balls are randomly chosen, without replacement, what is the probability that the balls have the same number on them?

3. Suppose there is a bag of tiles in it. On each tile is one letter from the phrase "MUNCIE INDIANA".

    a. Find the probability of choosing a tile with the letter "I" from this bag of tiles.

    b. Find the probability of choosing a tile with a letter other than "I".

    c. Find the probability of choosing a tile with a letter other than "N".

4. Suppose a committee of 5 is being formed randomly from people in the College of Sciences and Humanities. For the sake of this exercise, let's say there are 4 deans, 40 faculty, and 10 staff.

    a. What is the probability that all 5 of the committee members are faculty members?
        i. Solve this using the "direct way".

        ii. Solve this using "counting methods".

    b. What is the probability that none of the committee members are deans? Solve this whichever way you would like.

5. Two friends have a bag of jellybeans. Together, they have 25 flavors. If they decide to randomly choose two flavors, what is the probability that the two flavors they choose will consist of each of their favorite flavors (assuming they have different favorite flavors)?